

1. (Currently Amended) A medical device adapted to be implanted in the heart of a patient and operable therein i) as a heart valve; or ii) to assist in the functioning of one of the patient's heart valves; ~~or iii) to monitor the functioning of one of the patient's heart valves;~~ the medical device ~~comprising;~~

at least one sensor for sensing a physiologically or clinically relevant parameter of the patient ~~wherein said at least one sensor includes a piezoelectric sensor comprising a polymeric active sensing area which senses blood pressure of the patient;~~ and

telemetric communication means ~~comprising an RFID device~~ for telemetrically transmitting data related to the parameter sensed by the sensor to a remote device.

2. (Original) The medical device according to claim, 1 wherein the medical device comprises a heart valve for regulating the flow of blood through the medical device.

3. -7 (Canceled)

8. (Original) The medical device according to claim 1 wherein the telemetric communication means comprises an integrated circuit.

9. (Canceled)

10. (Currently Amended) The medical device according to claim 9₁ wherein said at least one sensor ~~includes~~^{comprises} at least two spaced apart piezoelectric sensors for sensing blood pressure at different locations in the heart of the patient, ~~each of the spaced apart sensors comprising a polymeric active sensing area which senses blood pressure of the patient.~~

11. (Original) The medical device according to claim 10 wherein the telemetric communication means telemetrically transmits data related to the difference in the blood pressures sensed by the at least two spaced apart sensors.

12. (Currently Amended) The medical device according to claim 1 wherein the said at least one sensor also senses acoustic signals.

13. (Canceled)

14. (Currently Amended) The medical device according to claim 12-13 wherein said piezoelectric at least one sensor ~~comprises a single sensor that~~ senses both blood pressure and acoustic signals.

15. – 17. (Canceled)

18. (Currently Amended) ~~The~~A medical device according to claim 1-17 wherein the polymeric active sensing area comprises PVDF.

19. (Original) The medical device according to claim 1 wherein the medical device comprises a tissue valve device having a valve wall formed from tissue.

20. (Original) The medical device according to claim 19 further comprising a stent support for the valve wall, and wherein the sensor and the telemetric communication means are disposed between the stent support and the valve wall.

21. (Original) The medical device according to claim 19 wherein the medical device is stentless.

22. (Original) The medical device according to claim 19 further comprising a protective

cover disposed around the periphery of the medical device, and wherein the sensor and the telemetric communication means are disposed between the valve wall and the protective cover.

23. (Original) The medical device according to claim 1 wherein the medical device comprises a mechanical heart valve.

24. (Currently Amended) A system for monitoring a patient comprising:

a medical device adapted to be implanted into the heart of a patient and operable therein
i) as a heart valve; or ii) to assist in the functioning of one of the patient's heart valves; the
medical device comprising: at least one sensor for sensing a physiologically or clinically relevant
parameter of ~~at~~ the patient wherein said at least one sensor includes a piezoelectric sensor
comprising a polymeric active sensing area which senses blood pressure of the patient;

telemetric communication means comprising an RFID device for telemetrically
transmitting data related to the parameter sensed by the sensor; and

a remote device for receiving the data telemetrically transmitted by the telemetric
communication means.

25. (Original) The system according to claim 24 wherein the remote device provides power
remotely to the telemetric communication means.

26. (Original) The system according to claim 24 wherein the remote device comprises a memory
unit for storing data transmitted by the telemetric communication means.

27. (Original) The system according to claim 24 wherein the remote device comprises data
analysis means for performing a physiologically relevant analysis of data transmitted by the

telemetric communication means.

28. (Original) The system according to claim 24 wherein the remote device comprises data transmission means.

29. (Original) The system according to claim 24 further comprising a data storage device which is separate to the remote device, and wherein the remote device comprises means to write data on the data storage device.

30. (Original) The system according to claim 29 wherein the data storage device comprises a card having a magnetic data storage area, a DVD, a CD or another disc storage medium.

31. (New) A medical device adapted to be implanted in the heart of a patient and operable therein i) as a heart valve; or ii) to assist in the functioning of one of the patient's heart valves; the medical device comprising:

at least one sensor for sensing the blood pressure of the patient and acoustic signals, wherein said at least one sensor includes a piezoelectric sensor comprising a polymeric active sensing area which senses blood pressure and acoustic signals of the patient; and

telemetric communication means comprising an RFID device for telemetrically transmitting data related to the blood pressure and acoustic signals sensed by the at least one sensor to a remote device.

32. (New) A medical device according to claim 31 in which said piezoelectric sensor senses both blood pressure and acoustic signals.

33. (New) A medical device according to claim 32 in which the polymeric active sensing area of

said piezoelectric sensor comprises PVDF.